

AUSTRALIA

Patents Act 1990

IN THE MATTER OF Australian Patent
Application Serial No 696764 by Human
Genomic Sciences, Inc.

-and-

IN THE MATTER OF Opposition thereto by
Ludwig Institute of Cancer Research

STATUTORY DECLARATION

I, Francis John Ballard of 52A Bridge Street, Kensington, South Australia 5068, do solemnly and sincerely declare as follows :

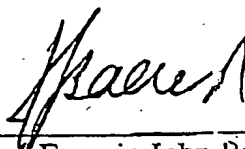
1. I currently hold the positions of Managing Director, GroPep Pty Ltd, Director and Chairman of PrimeGRO Pty Ltd and Affiliate Professor in Biotechnology at the University of Adelaide. I received my BSc with Honours in 1961 and my PhD in 1964, both of which were awarded by the University of Western Australia. Since that time I have worked substantially continuously as a scientific researcher in the USA and Australia in cellular biochemistry and molecular biology, with a particular focus since approximately 1980 on the molecular biology and mechanism of action of growth factors, including research into wound healing, endothelial cell growth, and angiogenesis. In addition to my own research efforts, I was Director of the Cooperative Research Centre ("CRC") for Tissue Growth and Repair (1991 to 1999), which required me to direct and coordinate the research programs of the CRC. In recognition of my distinguished contributions to scientific research I was awarded the Lemberg Medal by the Australian Biochemical Society (now the Australian Society for Biochemistry and Molecular Biology) in 1984 and in 1997 was elected a Fellow of the Australian Academy of Technological Sciences and Engineering. I receive numerous invitations to speak at national and international symposia in the areas of my scientific expertise. I also supervise the post-graduate research of others, and have authored and co-authored numerous original research articles published in peer-reviewed journals and I have (and do) serve on the editorial board of such journals. My detailed *Curriculum Vitae* is attached hereto as Exhibit 1.

2. I have been asked by the Ludwig Institute for Cancer Research ("Ludwig Institute") to serve as a scientific expert in connection with Ludwig Institute's opposition to the issuance of a Patent to Human Genome Sciences, Inc. ("HGS") based on HGS's Australian Patent Application Number 696764. I have read and understand the specification and claims of Australian Patent Application Number 696764.
3. I am aware that Associate Professor Peter Rogers of the Department of Obstetrics and Gynaecology, Monash University, Victoria, Australia has also been asked by the Ludwig Institute to serve as a scientific expert in this matter. I am aware that a Declaration by Associate Professor Rogers has been prepared.
4. I am aware that two Declarations by John Francis McCann of 31 Market Street, Sydney, New South Wales, have also been prepared in respect of this matter. I have read and understand the Declarations of John Francis McCann and the Exhibits thereto.
5. I have read and understand the Declaration by Associate Professor Rogers. I agree with the opinions expressed by Associate Professor Rogers in his declaration.

AND I MAKE this solemn declaration by virtue of the Statutory Declarations Act 1959, and subject to the penalties provided by that Act for the making of false statements in statutory declarations, conscientiously believing the statements contained in this declaration to be true in every particular.

DECLARED at Adelaide

this 16th day of February 2000



Francis John Ballard

BEFORE ME:

B. Dolman, J.P. 17434

NOTARY PUBLIC
A Division of the Public Trust Office
the State of South Australia

AUSTRALIA

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IN THE MATTER OF Australian Patent
Application Serial No 696764 by Human
Genome Sciences, Inc.

-and-

IN THE MATTER OF Opposition thereto by
Ludwig Institute for Cancer Research

THIS IS Exhibit 1 referred to in the Statutory Declaration of Francis John Ballard
made before me this 16th Day of February, 2000

B. Dolman, J.P. 17434

By Appointment
A Justice of the Peace for
the State of South Australia.

Abbreviated Curriculum Vitae, F.J. BALLARD, October 1999

- 1 NAME Francis John BALLARD
- 2 BIRTH 19 June 1940, Penang, Malaysia
- 3 QUALIFICATIONS 1961 BSc (Hons) (Univ. W.A)
1964 PhD (Univ. W.A)
1984 DSc (Univ. W.A)
- 4 PRESENT POSITIONS Managing Director, GroPep Pty Ltd.
Director and Chairman, PrimeGRO Pty Ltd
Affiliate Professor in Biotechnology, University of Adelaide
- 5 PREVIOUS APPOINTMENTS
- | | |
|-----------|--|
| 1965-1966 | Research Fellow, Temple University, USA |
| 1966-1969 | Assistant Professor of Biochemistry, Temple University, USA |
| 1969-1971 | Queen Elizabeth Fellow, CSIRO Nutritional Biochemistry |
| 1971-1972 | Senior Research Scientist, CSIRO Nutritional Biochemistry |
| 1972-1977 | Principal Research Scientist, CSIRO Nutritional Biochemistry |
| 1977-1980 | Senior Principal Research Scientist, CSIRO Human Nutrition |
| 1986-1994 | Chief Research Scientist, CSIRO Human Nutrition |
| 1986-1991 | Assistant Chief, CSIRO Human Nutrition |
| 1991-1994 | CEO, GroPep Pty Ltd |
| 1991-1999 | Director, CRC for Tissue Growth and Repair |
- 6 RESEARCH HONOURS and AWARDS
- | | |
|------|--|
| 1971 | Mead Johnson Award for Research in Nutrition |
| 1975 | Edgeworth David Medal |
| 1976 | Boehringer Mannheim Medal |
| 1978 | David Rivett Medal |
| 1980 | LKB Medal |
| 1984 | Lemberg Medal |
| 1997 | Fellow, Australian Academy of Technological Sciences and Engineering |
- 7 MEMBERSHIPS, COMMITTEES and OTHER ACTIVITIES
- | | |
|--------------|---|
| 1972-1977 | Secretary, Australian Biochemical Society |
| 1979-1982 | Chairman, Committee on Symposia, International Union of Biochemistry |
| 1979-1985 | Editorial Board, Journal of Development Physiology |
| 1979-1994 | SIDS Research Committee (SA) |
| 1981-1991 | Editorial Board, Proceedings of the Nutrition Society of Australia |
| 1982-1984 | President, Australian Biochemical Society |
| 1982-1990 | International Committee on Proteolysis |
| 1983-1988 | Editorial Board, Journal of Nutrition, Growth and Cancer |
| 1983-1990 | Editorial Board, Cell Biology and Toxicology |
| 1983-present | Muscular Dystrophy Association (SA) Research Advisory Committee |
| 1986-1990 | Queen Victoria Hospital – Research Advisory Committee |
| 1987-1990 | President, Australian Perinatal Society |
| 1988-1990 | Bresatec Ltd – Research Advisory Committee |
| 1990-1994 | Child Health Research Institute – Research Advisory Committee |
| 1994-present | Editorial Board, Biochemical Journal |
| 1995-present | Editorial Board, International Journal of Biochemistry and Cell Biology |
| 1999-present | Member, Australian Government Biotechnology Consultative |

KEY PAPERS

Ballard, F.J., Hanson, R.W and Kronfeld, D.S (1969) Carbohydrate and lipid metabolism in ruminants. *Fed.Proc.* 28, 218-231.

Philippidis, H., Hanson, R.W., Reshef, L., Hopgood, M.F. and Ballard, F.J. (1972) The initial synthesis of proteins during development. Phosphoenolpyruvate carboxykinase mRNA during glucose repression in liver. *Biochem. J.* 126, 1127-1134.

Tilghman, S., Hanson, R.W., Reshef, L. Hopgood, M.F. and Ballard, F.J. (1974) Rapid loss of translatable phosphoenolpyruvate carboxykinase mRNA during glucose repression in liver. *Proc. Nat. Acad. Sci. US* 71, 1304-1308.

Knowles, S.E and Ballard, F.J. (1976) Selective control of the degradation of normal and aberrant proteins in Reuber H35 hepatoma cells. *Biochem.J.* 156, 609-617.

Gunn, J.M., Clark, M.G., Knowles, S.E., Hopgood, M.F and Ballard, F.J. (1977) Reduced rates of proteolysis in transformed cells. *Nature* 266, 58-60

Ballard, F.J., Knowles, S.E., Wong, S.S.C., Bodner, J.B., Wood, C.M. and Gunn, J.M. (1980) Inhibition of protein breakdown in cultured cells is a consistent response to growth factors. *FEBS Lett.* 114, 209-212.

Ballard, F.J., Francis, G.L., Ross, M., Bagley, C.J., May, B. and Wallace, J.C. (1987) Natural and synthetic forms of insulin-like growth factor-I (IGF-I) and the potent derivative, destripeptide IGF-I: biological activities and receptor binding. *Biochem. Biophys. Res. Commun.* 149, 398-404.

Hopgood, M.F., Knowles, S.E., Bond, J.S. and Ballard, F.J (1988) Degradation of native and modified forms of aldolase microinjected into HeLa cells. *Biochem.J.* 256, 81-88.

Conlon, M.A., Tomas, F.M., Owens, P.C., Wallace, J.C. Howarth, G.S and Ballard, F.J. (1995) Long R³ insulin-like growth factor-I (LR³IGF-I) infusion stimulates organ growth but reduces IGF-I, IGF-II and IGF binding proteins in the guinea pig. *J. Endocrinol.* 146, 247-253.

Belford, D.A., Rogers, M.L, Regester, G.O., Francis, G.L, Liepe, I.J., Priebe, I.K. and Ballard, F.J. (1995) Milk-derived growth factors as serum supplements for the growth of fibroblast and epithelial cells. *In vitro Cell. Dev. Biol. Anim.* 31, 750-758.

TECHNOLOGY TRANSFER & COMMERCIALISATION

Patents:

Responsible for the preparation and responses to examiners worldwide for 12 patent families including the following ones as an inventor:

"Peptide analogues of mammalian IGF-I": PCT/AU86/00246

"Growth Factor": PCT/AU88/00485

"Method for treating intestinal diseases": PCT/AU91/00031

"Growth-promoting agent": PCT/AU91/00303

"Method of administering IGF-I, IGF-II and analogs thereof to birds": PCT/US93/08279

"Modified milk growth factor": PCT/AU95/00237

"Use of IGF in combination with insulin": PCT/AU95/00422

"Matrix binding factor": PCT/AU99/00292

Commercialisation:

Responsible for initiating, negotiating and finalising all R & D agreements, Licence agreements, and